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(56) Documents Cited

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(58) Field of Search

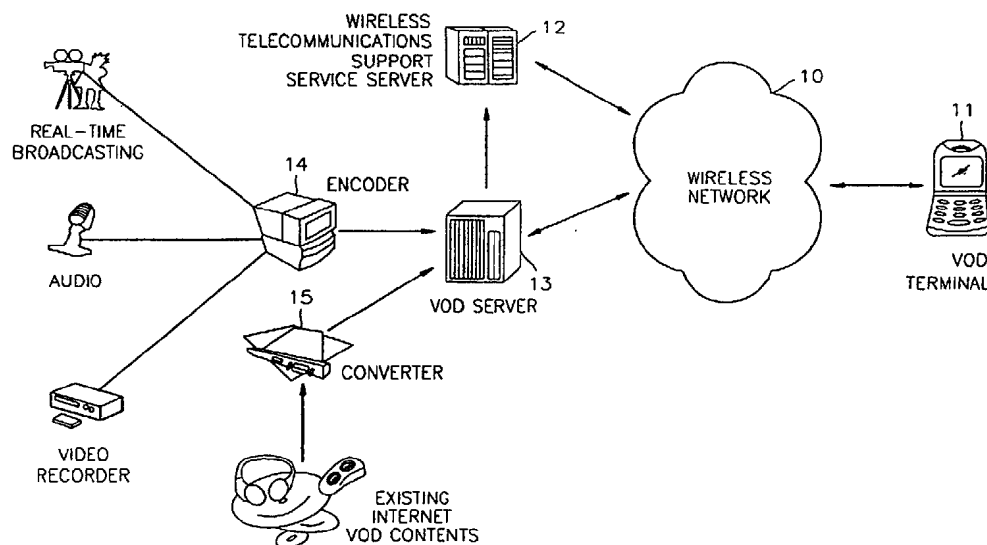
UK CL (Edition S) **H4L LDDDX LDPPX LEP LEUF LEUG**
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INT CL⁷ **G06F 13/00 17/60 , H04L 12/28 12/64 12/66 ,**
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(54) Abstract Title

Providing video on demand and internet services in a wireless network environment

(57) A system for providing video on demand (VOD) services and Internet services in a wireless network environment is provided. The VOD service providing system includes a VOD terminal 11 for displaying predetermined video information and a wireless telecommunications server 10 for providing a predetermined wireless telecommunications service menu so that the VOD terminal can select it. A VOD server 13 provides service information related to the VOD which was selected by the VOD terminal. A first converting means converts the predetermined contents input from the outside into a predetermined format to be stored in the VOD server 13 and a second converting means 15 converts predetermined contents input through the Internet into a predetermined format to be stored in the VOD server 13.

FIG. 1



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FIG. 1

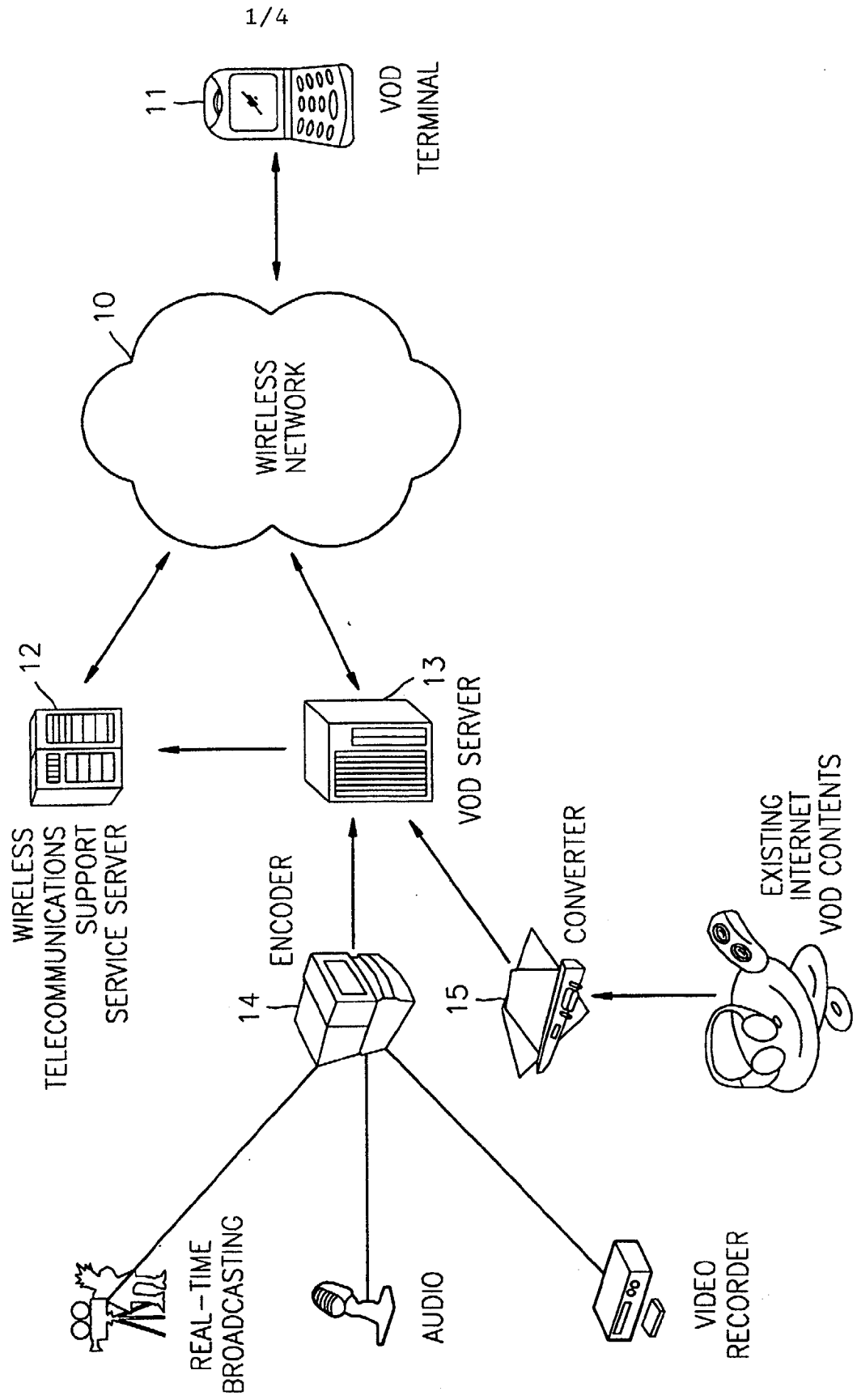


FIG. 2

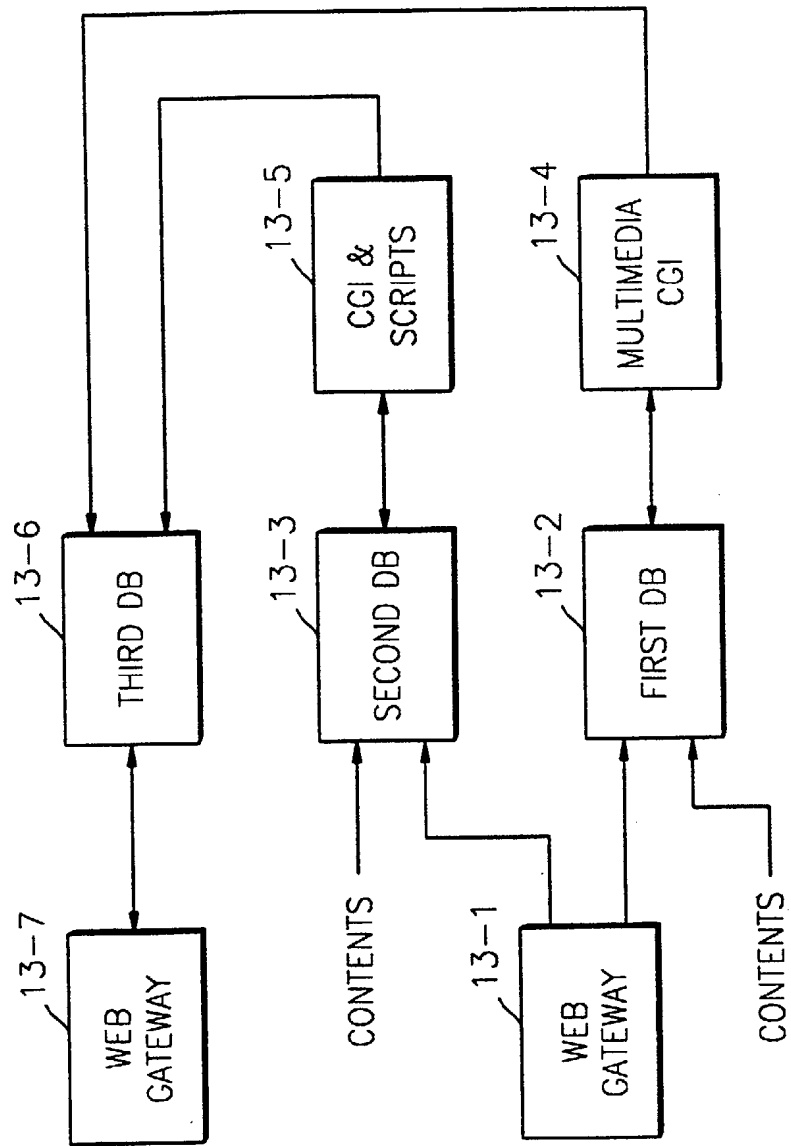


FIG. 3

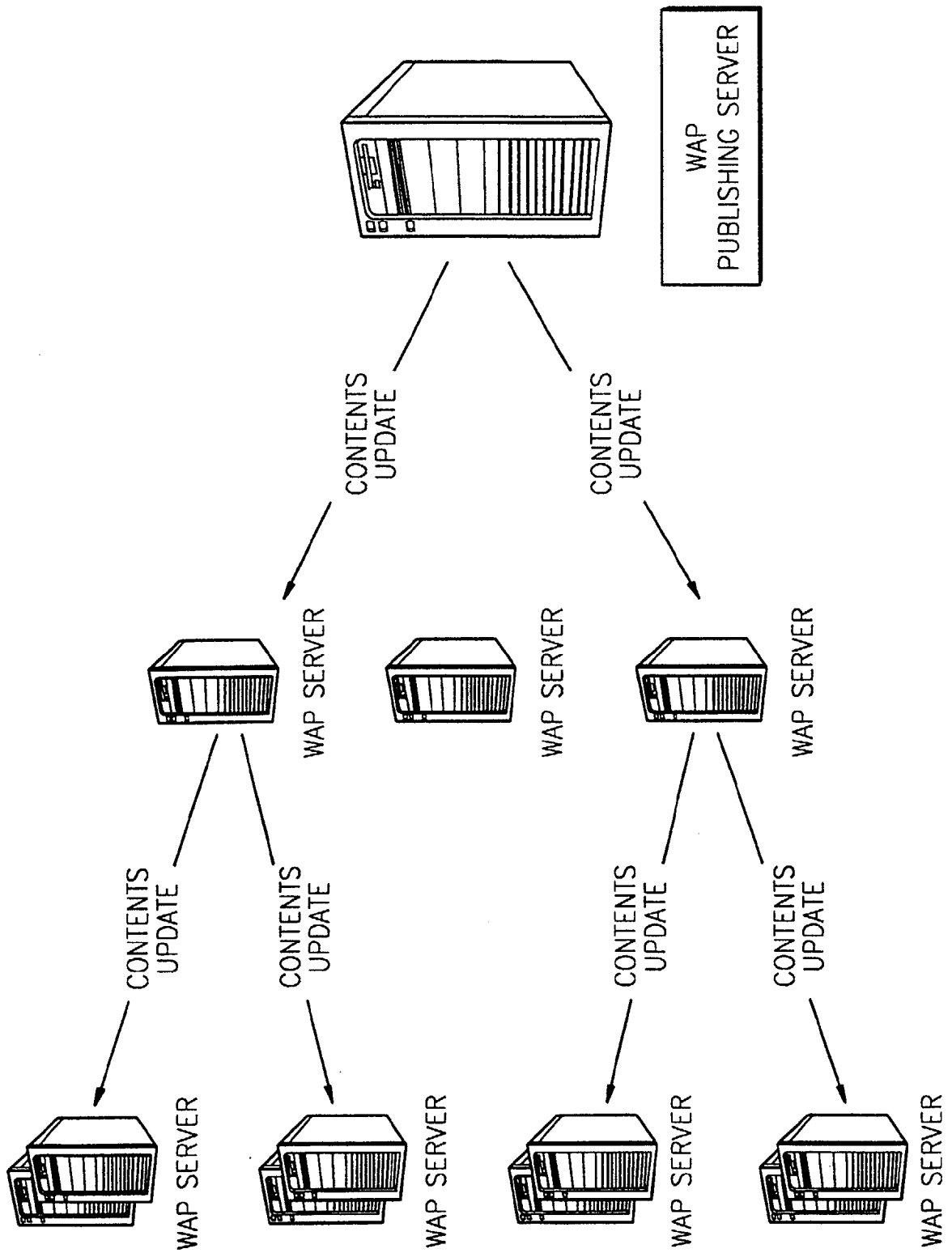
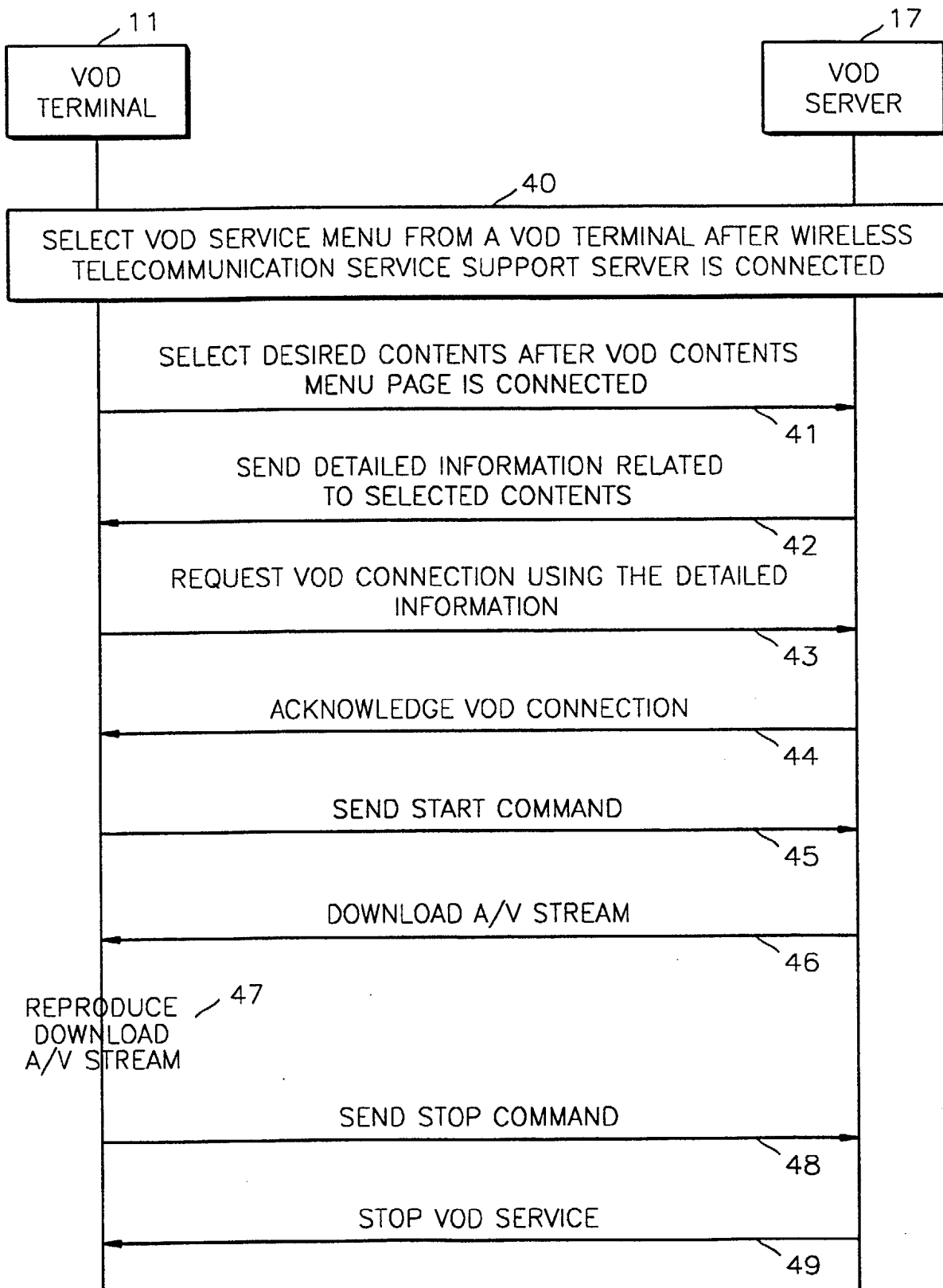


FIG. 4



**SYSTEM FOR PROVIDING VIDEO-ON-DEMAND SERVICES IN WIRELESS
NETWORK ENVIRONMENT AND METHOD THEREFORE**

The present invention relates to a system and method
5 for providing information services, and more particularly,
to a system for providing video-on-demand services and
Internet services in a wireless network environment and a
method therefor.

10 Wireless Internet is the use of the Internet without a
wired connection. Although the Internet or PC
communications can be enjoyed without wires thanks to
developments in mobile telecommunications, the number of
users who use the Internet when they move from one place
15 to another is still limited. This is because the
transmission speeds of most mobile phones currently used
are limited to 9.6-14.4 Kbps. Therefore, communications
of Internet data without special processing takes much
time and on-air telecommunications costs are high. When
20 purchase expenses for necessary devices, such as a
computer, a wireless modem, and connecting cables, are
added to the costs, it would appear that wide spread use
of mobile communications of Internet will take a long
time.

25

Four multinational companies, Ericsson, Motorola,
Nokia and Unwired Planet, proposed a wireless application
protocol (WAP) for the first time in 1997, and since then,
various companies all over the world, including service
30 providers, equipment manufacturers, and application
providers, are participating in the development of the WAP
protocol.

WAP is a generic name for a protocol that enables the use of the Internet from a small wireless terminal such as a mobile phone or a personal data assistant (PDA). Previously, in order to use the Internet with a mobile
5 phone, a notebook computer with an installed modem card for a mobile phone had to be connected to a terminal. However, the WAP has enabled Internet communications using the mobile phone terminal itself.

10 Since unlike existing mobile phone services, a service using the WAP uses Internet technologies that are being standardized globally, a wide range of services can be provided. Currently diverse services are being prepared, and among them are diverse communication tools such as an
15 on-line information service.

In an information service, voice services or partial character services have previously been provided. However, when a WAP technology is adopted, information
20 services can be received in a place registered by a pre-setting, even when a user is away from home. When this service is provided, a user does not need dial a predetermined number to find the information the user wants.

25

However, wireless services using the WAP has been limited to text transmission so far. Therefore, a technology which can add multimedia functions to a wireless terminal having the WAP for text transmission so
30 that the terminal can receive diverse services is required.

With a view to solve or reduce the above problems, it is an aim of embodiments of the present invention to provide a video-on-demand (VOD) service providing system for providing VOD services and Internet services through a wireless application protocol (WAP) in a wireless network environment.

It is another aim to provide a VOD service providing method for providing VOD services and Internet services through a WAP in a wireless network environment.

According to a first aspect of the present invention there is provided a system for providing video-on-demand (VOD) services in a wireless network environment, the system comprising: a VOD terminal for displaying predetermined video information; a wireless telecommunications server for providing predetermined wireless telecommunications service menu so that the VOD terminal can select it; a VOD server for providing service information related to the selected VOD item, in the service menu provided by the wireless telecommunications server, by the VOD terminal; a first converting means for converting predetermined contents input from the outside into a predetermined format to be stored in the VOD server; and a second converting means for converting predetermined contents input through the Internet into a predetermined format to be stored in the VOD server.

Preferably, the VOD server further comprises: a first storing means for storing predetermined VOD information input from the outside or through the Internet; a converting means for converting the predetermined VOD information stored in the first storing means into

information for wireless telecommunications; and a second storing means for storing wireless telecommunications information of the converting means.

5 The VOD server may be formed by a plurality of simultaneously-operating servers so that VOD information providers through the first and second converting means and predetermined VOD information providers can access the server.

10

According to a second aspect of the invention, there is provided a method for providing VOD services in a wireless network environment wherein a VOD terminal, a wireless telecommunication service support server for providing wireless telecommunications services, a VOD server for providing predetermined video and voice services to the VOD terminal, the method comprising the steps of: (a) selecting in the VOD terminal a VOD service menu, after connected to the wireless telecommunications service support server; (b) providing predetermined information related to the VOD item provided by the VOD server, to the VOD terminal in response to the selection; and (c) receiving a VOD service in the VOD terminal using the predetermined information.

25

Preferably, when the VOD terminal sends a stop command when the VOD terminal uses the VOD service, the VOD server stops providing the VOD service.

30

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 is a block diagram showing the structure of a system embodiment for providing a video-on-demand (VOD) service in a wireless network environment according to the present invention;

Figure 2 is a detailed diagram of the wireless application protocol (WAP) VOD server shown in Figure 1;

Figure 3 illustrates the scope of applications of the WAP VOD server shown in Figure 1; and

Figure 4 is a flowchart showing the operation of a method embodiment for providing a VOD service in a wireless network environment according to the present invention.

Hereinafter, embodiments of the present invention will be described in detail with reference to the attached drawings. The present invention is not restricted to the following embodiments, and many variations are possible within the spirit and scope of the present invention. The embodiments of the present invention are provided in order to more completely explain the present invention to one skilled in the art.

Figure 1 is a block diagram showing the structure of a system for providing a video-on-demand (VOD) service in a wireless network environment according to the present invention.

Referring to Figure 1, the system includes a wireless network 10, a VOD terminal 11, a wireless

telecommunications service support server 12, a WAP VOD server 13 (hereinafter referred to as "VOD server") which provides VOD-related services among wireless telecommunications services provided by the wireless telecommunications service support server 12, to the VOD terminal 12, an encoder 14 which encodes predetermined programs (hereinafter referred to as "contents"), including real-time broadcasts, audio, video recorders, which are input from the outside and provided by VOD information suppliers, in the form of wireless communications information, and a converter 15 which converts the predetermined contents input through the Internet in the form of wireless communications information.

15

Figure 2 is a detailed diagram of the wireless application protocol (WAP) VOD server shown in Figure 1.

The VOD server 13 shown in Figure 1 includes a web gateway 13-1 for sending Internet information; a first database (hereinafter referred to as "DB") 13-2 for storing video information among Internet information input through the web gateway 13-1 or contents information input from the outside; a second database 13-3 for storing information other than video information among Internet information input through the web gateway 13-1 or contents information input from the outside; a multimedia common gateway interface (CGI) 13-4 for converting video information stored in the first DB 13-2 into an image directory or file appropriate for a wireless telecommunications environment; CGI and scripts 13-5 for converting non-video information stored in the second DB 13-3 into wireless markup language (WML) data appropriate

for a wireless telecommunications environment; a third DB 13-6 for storing the WML and the image directory and file converted by the multimedia CGI 13-4 and CGI and scripts 13-5, respectively; and a WAP gateway 13-7 for wirelessly
5 sending information stored in the third DB 13-6.

Figure 3 illustrates the scope of applications of the WAP VOD server shown in Figure 1.

10 Figure 4 is a flowchart showing the operation of a method for providing a VOD service in a wireless network environment according to the present invention.

The method shown in Figure 4 includes the steps of
15 selecting from a VOD terminal a VOD service menu after a wireless telecommunications service support server is connected (step 40); selecting desired contents after a VOD contents menu page is connected (step 41); sending detailed information related to the selected contents
20 (step 42); requesting VOD connection using the detailed information (step 43); acknowledging the VOD connection (step 44); sending a start command (step 45); downloading an A/V stream (step 46); reproducing the downloaded A/V stream (step 47); sending a stop command (step 48); and
25 stopping the VOD service (step 49).

Referring to Figures 1 through 4, the present invention will not be explained in detail.

30 The VOD terminal 11 is connected to the wireless telecommunications service support server 12 through the wireless network 10, and selects a VOD service menu in step 40.

The VOD terminal 11 is formed by a WAP browser (not shown) and a VOD player (not shown), and the WAP browser of the VOD terminal 11 is connected to the wireless telecommunications service support server 12 and selects the VOD service menu. The wireless telecommunications service support server 12 provides diverse information, including information stocks, news, entertainment, among other things, through the wireless network in addition to the VOD service menu.

The WAP browser of the VOD terminal 11 is connected to a VOD contents menu page provided by the VOD server 13 and then selects desired contents in step 41.

The VOD server 13 provides VOD related services among wireless telecommunications services provided by the wireless telecommunications service support server 12, to the VOD terminal 11. At this time, the VOD server 13 stores predetermined contents, including those from real-time broadcasts, audio and video recorders, which are converted by the encoder 14 after input from the outside and which are provided by VOD information providers, and predetermined Internet contents input through the converter 15. The VOD server 13 provides diverse services based on the stored VOD contents, to the VOD terminal 11.

The structure of the VOD server 13 providing VOD services is shown in Figure 2. Internet information provided to the VOD server 13 is stored in the first DB 13-2 or the second DB 13-3 through the web gateway 13-1. Contents information from information providers of real-time broadcasts, audio and video recorders, is also stored

in the first DB 13-2 or the second DB 13-3. In storing, video information among Internet information input through the web gateway 13-1 or contents information input from the outside is stored in the first DB, while non-video
5 information among the Internet information and the contents information is stored in the second DB. Video information stored in the first DB 13-2 is converted into an image directory or file appropriate for the wireless telecommunications environment, in the multimedia CGI 13-4
10 and then stored in the third DB 13-6, while non-video information stored in the second DB 13-3 is converted into WML appropriate for the wireless telecommunications environment, in the CGI and scripts 13-5 and then stored in the third DB 13-6. That is, the third DB 13-6 stores
15 WMLs converted in the multimedia CGI 13-4 and image directories or files converted in the CGI and scripts 13-5. Information appropriate for the wireless telecommunications environment, stored in the third DB 13-6 is provided to the VOD terminal 11 through the WAP
20 gateway 13-7.

Information stored in the first and second DBs 13-2 and 13-3 can be updated to the latest information by information providers. On the multi-server shown in
25 Figure 3, contents can be formed in a cascade structure. The reason for the cascade structure is because the maximum capacity of a server is limited. With this kind of structure, the load can be distributed for processing. Also, the structure is for providing more diverse
30 information to users with a large number of simultaneously-operating servers. Also, because of such a structure, the speed of contents updated by information

providers can be improved and VOD terminals 11 can receive diverse information including real-time information.

The VOD server 13 provides detailed information
5 related to the selected contents to the VOD terminal 11 in step 42. Detailed information provided by the VOD server 13 includes information such as the name of an application program, the location of a movie site (uniform resource locator, URL), version, port, among others. Using the
10 provided information, the VOD terminal 11 request the VOD server 13 to connect the VOD in step 43. That is, the VOD terminal 11 requests a connection to the desired movie site, for example, using detailed information. Responding
t the connection from the VOD terminal, the VOD server
15 acknowledges the VOD connection in step 44. After the acknowledgment from the VOD server, the VOD terminal 11 sends a start command for downloading movie information in step 45. When the start command is sent to the VOD server 13, the VOD server 13 downloads an audio/video (A/V)
20 stream to the VOD terminal 11 and reproduces it in steps 46 and 47. After the start command is sent, the VOD server 13 provides information stored in the third DB 13-6 to the VOD terminal 11 through the wireless network. At this time, the VOD server 13 also sends function
25 information such as fast forward, rewind, pause, in addition to the A/V stream so that the VOD terminal 11 can use function information by selecting it. When all information requested to the VOD terminal 11 is download or reproduction is finished, a VOD service stop command is
30 sent to the VOD server in step 48. The VOD service stop command can be sent during VOD information download. When the stop command is sent to the VOD server 13, the VOD

service provided to the VOD terminal 11 is stopped in step 49.

The present invention is not restricted to the above-
5 described embodiments, and many variations are possible within the spirit and scope of the present invention. According to the system, a VOD terminal user can receive VOD services and Internet services through a WAP in a wireless telecommunications environment so that
10 information usage and satisfaction can be maximized.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and
15 which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification
20 (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

25

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly
30 stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extend to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims,
5 abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

CLAIMS

1. A system for providing video-on-demand (VOD) services in a wireless network environment, the system comprising:

5

a VOD terminal for displaying predetermined video information;

a wireless telecommunications server for providing
10 predetermined wireless telecommunications service menu so that the VOD terminal can select it;

a VOD server for providing service information related to the selected VOD item, in the service menu provided by
15 the wireless telecommunications server, by the VOD terminal;

a first converting means for converting predetermined contents input from the outside into a predetermined
20 format to be stored in the VOD server; and

a second converting means for converting predetermined contents input through the Internet into a predetermined format to be stored in the VOD server.

25

2. The system of claim 1, wherein the VOD server further comprises:

a first storing means for storing predetermined VOD
30 information input from the outside or through the Internet;

a converting means for converting the predetermined VOD information stored in the first storing means into information for wireless telecommunications; and

5 a second storing means for storing wireless telecommunications information of the converting means.

3. The system of claim 2, wherein the VOD server is formed by a plurality of simultaneously-operating servers
10 so that VOD information providers through the first and second converting means and predetermined VOD information providers can access the server.

4. A method for providing VOD services in a wireless
15 network environment wherein a VOD terminal, a wireless telecommunication service support server for providing wireless telecommunications services, a VOD server for providing predetermined video and voice services to the VOD terminal, the method comprising the steps of:

20

(a) selecting in the VOD terminal a VOD service menu, after connected to the wireless telecommunications service support server;

25 (b) providing predetermined information related to the VOD item provided by the VOD server, to the VOD terminal in response to the selection; and

(c) receiving a VOD service in the VOD terminal using the
30 predetermined information.

5. The method of claim 4, wherein when the VOD terminal sends a stop command when the VOD terminal uses the VOD service, the VOD server stops providing the VOD service.

5 6. A system for providing video on-demand, the system being substantially as herein described with reference to the accompanying drawings.

7. A method of supplying video services substantially as
10 herein described with reference to the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0101283.0
Claims searched: 1-5

16
Examiner: Hannah Sylvester
Date of search: 20 October 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

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Int Cl (Ed.7): H04N 5/00, 5/445, 5/92, 7/173, 7/24, 7/10, 7/088, 5/60, G06F 17/60, 13/00, H04L 12/28, 12/64, 12/66, H04M 7/00

Other: Online: WPI EPODOC JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2298544A (MALIK)	
A	JP2000092450A (MATSUSHITA)	
A	JP1000032790A (NTT)	
A	WO01/15397A1 (KING)	
A	WO00/67470A1 (UNISYS)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.